

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicant : Lin et al.
App. No : 10/815,905
Filed : March 31, 2004
For : INTERFEROMETRIC MODULATION
PIXELS AND MANUFACTURING
METHOD THEREOF
Examiner : Hoang Q. Tran
Art Unit : 2874
Conf No. : 9293

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Jeremy R. Pierce, Reg. No. 59,034

PRE-APPEAL BRIEF REQUEST FOR REVIEW

Mail Stop AF

Commissioner for Patents

P.O. Box 1450

Alexandria, VA 22313-1450

Dear Sir:

Applicants request review of the rejections of Claims 20-28 in the Final Office Action of July 22, 2009 for the above-identified application. No amendments are being filed with this request.

Enclosed with this Request is a Notice of Appeal.

REASONS FOR REQUEST

Review of the above-identified application is requested for the following reasons:

There are Clear Errors in the Examiner's Rejection Under 35 U.S.C. §103(a)

Claims 20, 21, 23, and 26-28 are rejected under 35 U.S.C. §103(a) as being unpatentable over U.S. Patent No. 5,835,255 to Miles ("Miles") in view of Matsumoto et al., "Novel Prevention Method of Stiction Using Silicon Anodization for SOI Structure," Sensors and Actuators, A72 (1999) 153-159 ("Matsumoto"). The Examiner's rejection contains clear error because the Examiner has not established a *prima facie* case of obviousness since the combination of references proposed by the Examiner does not provide a reasonable expectation of success.

To support a conclusion that a claim would have been obvious, M.P.E.P. § 2143.02 requires that “one skilled in the art could have combined the elements as claimed by known methods with no change in their respective functions.” The prior art can only be modified or combined to reject claims as obvious if there is a reasonable expectation of success. *In re Merck & Co., Inc.*, 800 F.2d 1091, (Fed. Cir. 1986).

Miles discloses an optical display device that functions by modulating light. One of the stated features of the light modulating device disclosed by Miles is that such a device provides “high resolution, full-color images” (Miles, column 3, line 5). The Miles device is dependent upon its ability to reflect and modulate light (*see* Miles, column 2, lines 30-56). In fact, Miles states that lower layer 502 and upper layer 506/508 in the optical device are both mirror layers (Miles, column 13, lines 27-30). The ability of the mirrors to reflect light properly is further described by Miles at, for example, column 1, line 62 – column 2, line 7 (*see below*).

The predetermined impedance characteristic may include reflection of incident electromagnetic radiation in the visible spectrum, e.g., the proportion of incident electromagnetic radiation of a given frequency band that is, on average, 65 reflected by each of the modulation elements. The modulation element may be responsive to a particular electrical

2

condition to occupy either a state of higher reflectivity or a state of lower reflectivity, and the control circuitry may generate a stream of pulses having a duty cycle corresponding to the proportion of incident radiation that is reflected 5 and places the modulation element in the higher state of reflectivity during each the pulse and in the lower state of reflectivity in the intervals between the pulses. The charac-

It is clear that the Miles device is not simply a micromechanical device. Rather, the Miles device is an optical device whose function depends upon its ability to reflect and modulate light in a particular manner.

The Examiner relies on Matsumoto for the proposition that one of ordinary skill in the art could insert a self-assembled monolayer (“SAM”) or a fluorocarbon film into the device of Miles. However, Matsumoto does not address the important aspects of an optical device’s ability

to reflect and modulate light. Matsumoto discloses a “study made on the application of silicon anodization process to prevent both ‘after-rinse stiction’ and ‘in-use stiction’ for SOI sensors” (Matsumoto, p. 153). While the disclosed SOI sensors are micromechanical devices, there is no indication that their performance is dependent on their optical properties. Nor does Matsumoto provide any discussion regarding an SOI sensor’s ability to modulate or reflect light. Matsumoto merely states that the “formation of [a] hydrophobic surface such as SAM or fluorocarbon film is one of the effective methods to prevent stiction although these methods require additional fabrication process or specific equipment” (Matsumoto, p. 154).

However, Matsumoto does not provide any reason for one of ordinary skill in the art to use either of the self-assembled monolayer (“SAM”) or the fluorocarbon film in an optical device, and is silent with regard to whether such use on the reflective surfaces of an optical device would likely be successful. Therefore, Matsumoto provides no reasonable expectation of success for modifying an optical device to include a hydrophobic layer, because it fails to account for the effect such modification one skilled in the art would have expected such a layer to have on optical performance.

Applicants previously cited several references for the proposition that, at the time of the invention, neither fluorocarbon films nor SAMs would necessarily have been considered compatible with optical devices that modulate light. For example, U.S. Patent No. 5,730,792 to Camilletti et al. describes fluorocarbon polymers as “opaque materials or obstructing agents” at column 5, lines 24-47. Additionally, U.S. Patent No. 6,020,047 to Everhart discloses that SAMs both reflect and transmit visible light such that “[r]ainbow diffraction colors were observed with transmitted white light” at column 7, lines 61-67.

The evidence of record, unrebutted by the Examiner, establishes that fluorocarbons and SAM’s can negatively affect the ability of a mirror layer, such as the mirror layer described by Miles, to reflect light, and Matsumoto does not contradict this evidence. The Miles device would not function properly, *e.g.* to provide high resolution, full-color images in the manner described by Miles, if the mirror layers did not properly reflect light. Therefore, there is no *prima facie* obviousness in view of the evidence of record because the combination of references proposed by the Examiner does not provide a reasonable expectation of success.

The Examiner made several arguments in the Final Office Action, each of which are addressed below. First, in the "Response to Arguments" section on page 5 of the Final Office Action, the Examiner stated that "[A]pplicant argues that the prior art to Miles is not a micromechanical device." This is an inaccurate characterization of the argument actually made by Applicants. As outlined above, Applicants previously argued that "the Miles device is not simply a micromechanical device. Rather, the Miles device is an optical device whose function depends upon its ability to reflect and modulate light" (emphasis added). Applicants were pointing out that, importantly, the micromechanical device of Miles heavily relied on its optical function and ability to reflect and modulate light. The Examiner did not rebut this aspect of Miles.

Instead, on page 6 of the Final Office Action, the Examiner cited to column 15, lines 16-67 of Miles and asserted that "the mirror of Miles is capable of both transmitting and reflecting." The Examiner then argued that "adding an additional film using SAM base materials and techniques would not prevent the device of Miles from functioning since the SAM base material is capable of both transmitting and reflecting. The level of T/R can be adjusted by one of ordinary skill in the art." Applicants respectfully disagree. The Examiner's conclusion that transmittance and reflection can simply be adjusted upon the addition of an opaque layer that interferes with or scatters light is a conclusory statement that is unsupported by any evidence.

The "T/R" plots in Miles refer to the ability of the optical devices to transmit and reflect visible light in the driven and undriven states (column 14, lines 46-55). However, there is simply nothing in either Miles or Matsumoto that teaches a person having ordinary skill in the art how to adjust both the transmission and reflectivity of a material upon the addition of an opaque fluorocarbon or SAM-based film.

The Examiner's assertion that a "SAM base material is capable of both transmitting and reflecting" is misleading because it amounts to nothing more than a *non sequitur*. Many materials, such as paper, reflect and transmit light, but one would not put paper over a mirror and expect it to function properly. Likewise, even with knowledge that a SAM would reflect and transmit light, the more important inquiry is *how* one of skill in the art would expect a SAM to transmit and reflect light. Applicants previously submitted the Everhart reference as evidence for the proposition that a SAM reflects and transmits diffraction patterns and that rainbow diffraction

colors were observed with transmitted white light. Thus, based on Everhart one skilled in the art would have expected that the SAM layer proposed by the Examiner would scatter light into multiple wavelengths in a manner completely in conflict with the teachings of Miles, which discloses a device that provides "high resolution, full-color images" (Miles, column 3, line 5). Miles does not provide any disclosure as to how one of ordinary skill in the art could control transmittance and reflectance of such a scattered diffraction pattern. Nor does the Examiner support that assertion with any evidence of record.

Rather, the evidence that is of record clearly indicates that one of ordinary skill in the art at the time of the invention would not have had a reasonable expectation of success to modify the optical device of Miles, which heavily relies on its ability to control and modulate light, by adding an opaque or light scattering layer that could interfere with the light modulation. Therefore, Applicants respectfully request withdrawal of the rejection.

Claims 22, 24, and 25 are rejected as being unpatentable over Miles in view of Matsumoto and further in view of U.S. Patent No. 6,335,224 to Peterson et al. ("Peterson"). However, Peterson does not cure the defects of Miles and Matsumoto discussed above.

Since the factual findings of record strongly support non-obviousness of the claims over the cited references, the Examiner's failure to address and rebut Applicants' evidence and arguments constitutes clear error.

CONCLUSION

The rejection of the claims is clearly erroneous and must be reversed. Accordingly, the claims are in condition for allowance. Please charge any additional fees, including any fees for additional extension of time, or credit overpayment to Deposit Account No. 11-1410.

Respectfully submitted,

KNOBBE, MARTENS, OLSON & BEAR, LLP

Dated: 9/21/09

By: 

Jeremy Pierce
Registration No. 59,034
Attorney of Record
Customer No. 59,747
(619) 235-8550